PATENT & TRADEMARK OFFICE
JUL 30 2001
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Atty. Docket No. YOR20000388US1
(590.022

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	: Padmanabhan et al.		
Serial No.	: 09/699,894	Examiner :	Unassigned
Filed	: October 30, 2000	Art Unit :	Unassigned
For	: MINIMUM BAYES ERROR FEATURE SELECTION IN SPEECH RECOGNITION		

8/6/01
NB

July 25, 2001

SUBMISSION OF FORMAL DRAWINGS

I hereby certify that this correspondence and any documents referred to as enclosed therewith are being deposited with the United States Postal Service as first class mail, addressed to the Assistant Commissioner for Patents, Washington, DC 20231 on July 25, 2001.

Stanley D. Ference III
Reg. No. 33,879

July 25, 2001
Date of Signature

Assistant Commissioner for Patents
Washington, DC 20231

Attention: Official Draftsman

Sir:

Applicants submit herewith three (3) sheets of formal drawings for the above-identified application. Please substitute the enclosed formal drawings for the informal drawings filed with the application.

Respectfully submitted,

Stanley D. Ference III
Registration No. 33,879

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Enclosures

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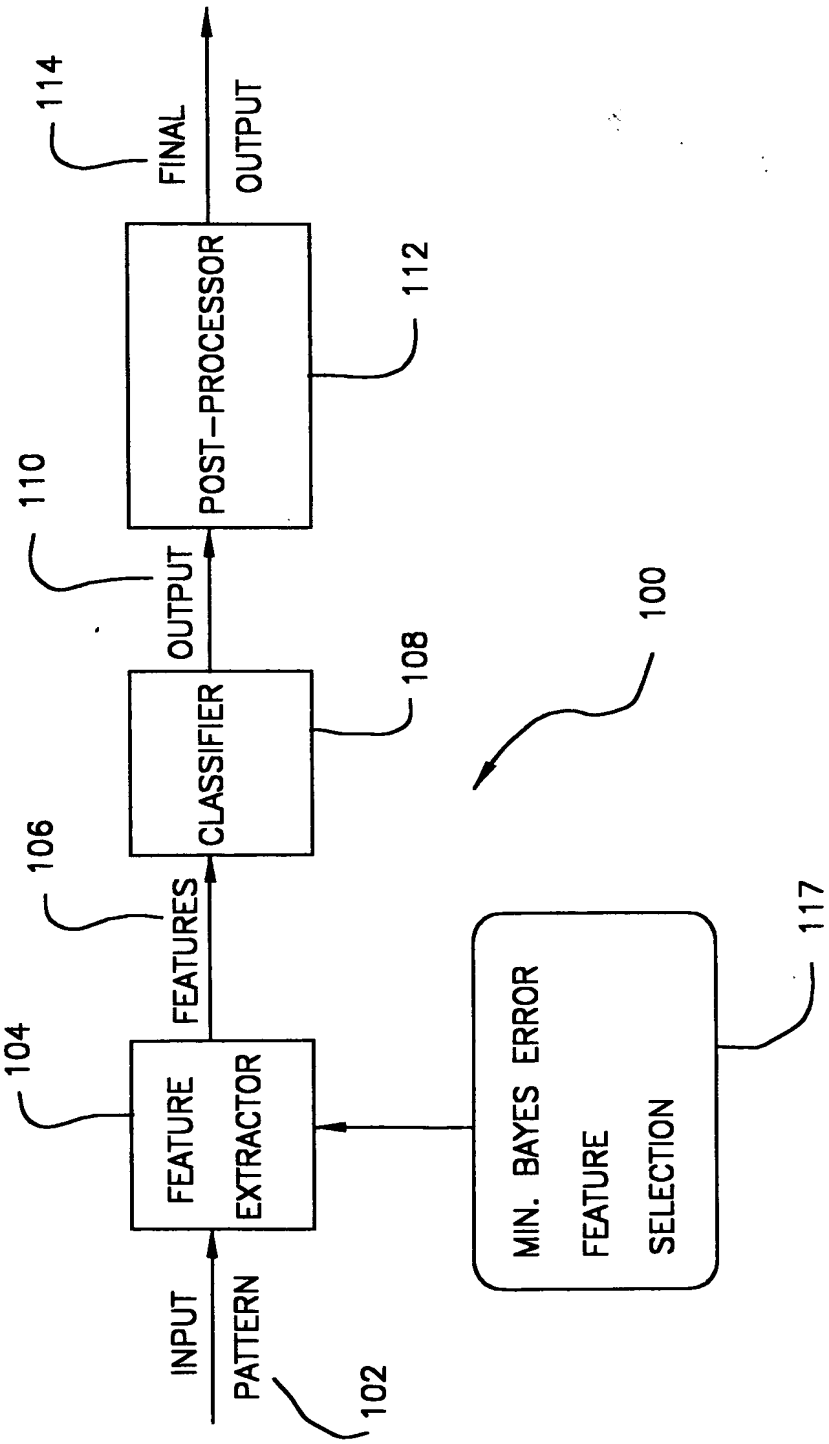
INPUT
PATTERN
102
FEATURE
EXTRACTOR
104
FEATURES
106
CLASSIFIER
108
OUTPUT
110
POST-PROCESSOR
112
FINAL
OUTPUT
114
MIN. BAYES ERROR
FEATURE
SELECTION
117
100

FIG. 1

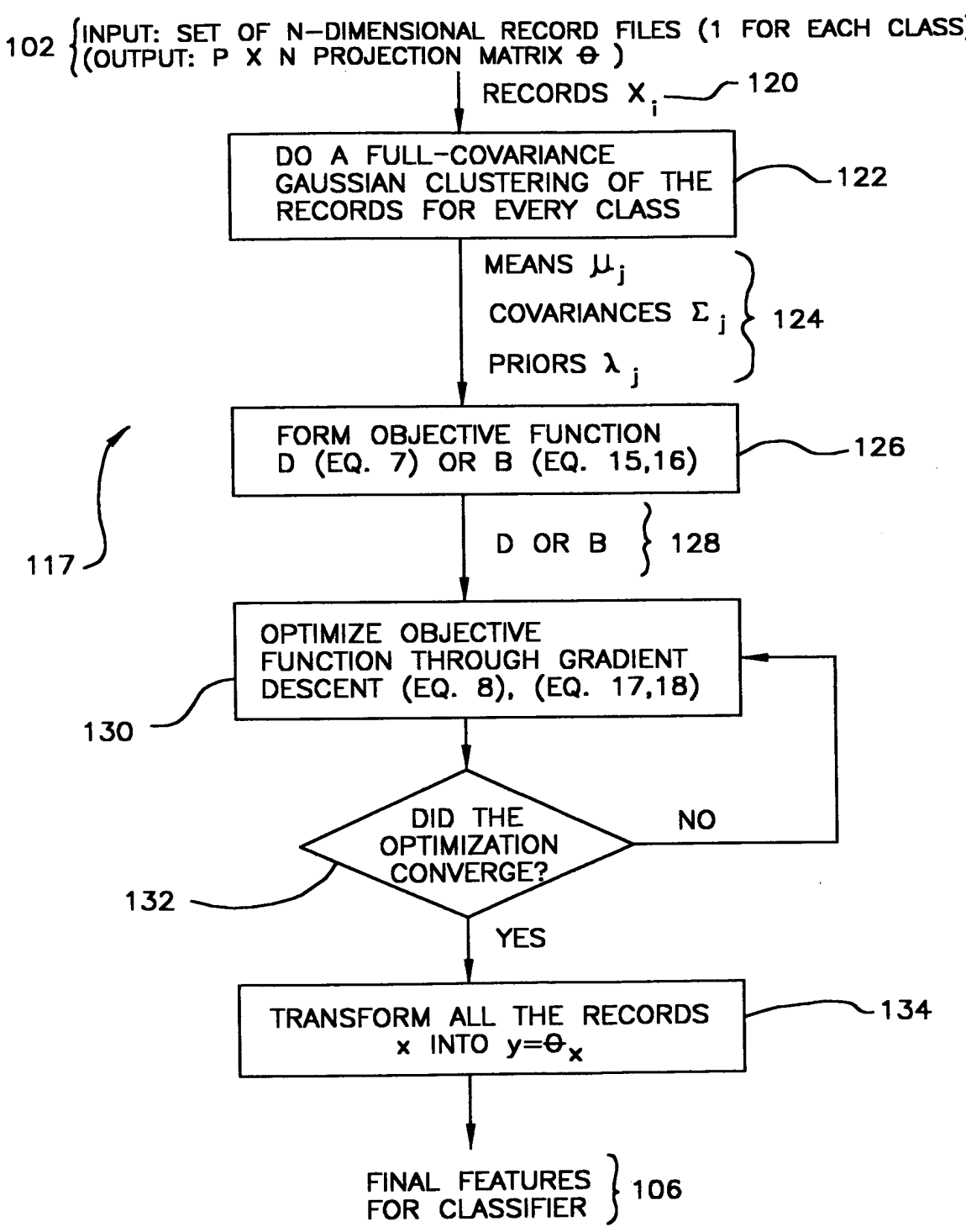
102
INPUT: SET OF N-DIMENSIONAL RECORD FILES (1 FOR EACH CLASS)
(OUTPUT: P X N PROJECTION MATRIX Θ)
RECORDS X_i
120
DO A FULL-COVARIANCE GAUSSIAN CLUSTERING OF THE RECORDS FOR EVERY CLASS
122
MEANS μ_j
COVARIANCES Σ_j
PRIORS λ_j
124
FORM OBJECTIVE FUNCTION D (EQ. 7) OR B (EQ. 15,16)
126
117
D OR B
128
OPTIMIZE OBJECTIVE FUNCTION THROUGH GRADIENT DESCENT (EQ. 8), (EQ. 17,18)
130
DID THE OPTIMIZATION CONVERGE?
NO
132
YES
TRANSFORM ALL THE RECORDS x INTO $y=\Theta x$
134
FINAL FEATURES FOR CLASSIFIER
106

FIG. 2

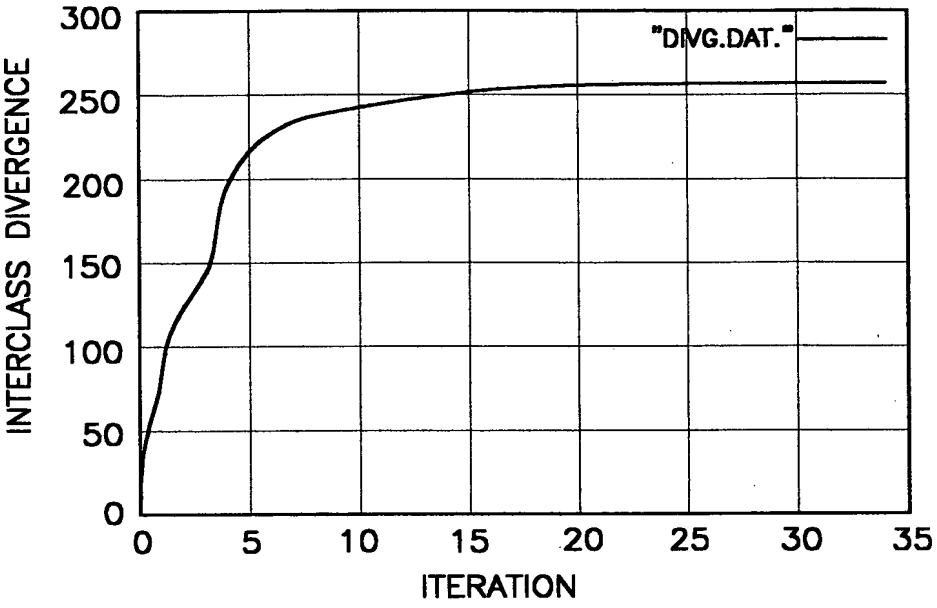
"DIVG.DAT."
INTERCLASS DIVERGENCE
300
250
200
150
100
50
0
0
5
10
15
20
25
30
35
ITERATION

FIG. 3

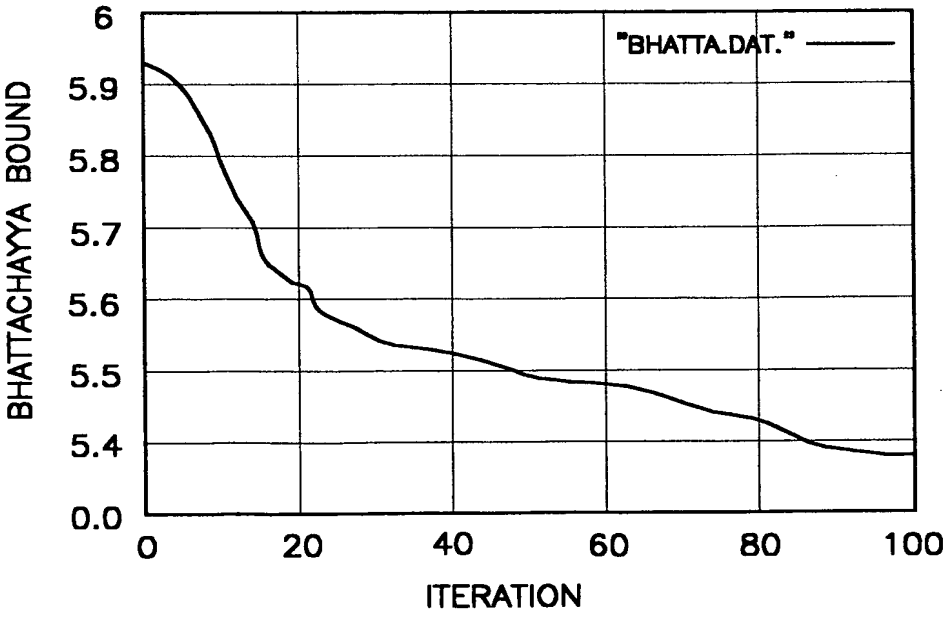
"BHATTA.DAT."
BHATTACHAYYA BOUND
6
5.9
5.8
5.7
5.6
5.5
5.4
0.0
0
20
40
60
80
100
ITERATION

FIG. 4